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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/463,059	01/19/2000	TATSUYA NAKANO	2224-163P	5816

2292 7590 04/18/2002

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

CLARKE, YVETTE M

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 04/18/2002

15

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-15

Office Action Summary	Applicant(s)	
	09/463,059	NAKANO, TATSUYA
	Examiner	Art Unit
	Yvette M Clarke	1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is written in reference to application number 09/463059 filed on January 10, 2000.

Request For Continued Examination (RCE)

1. The request filed on March 11, 2002 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 09/463,059 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

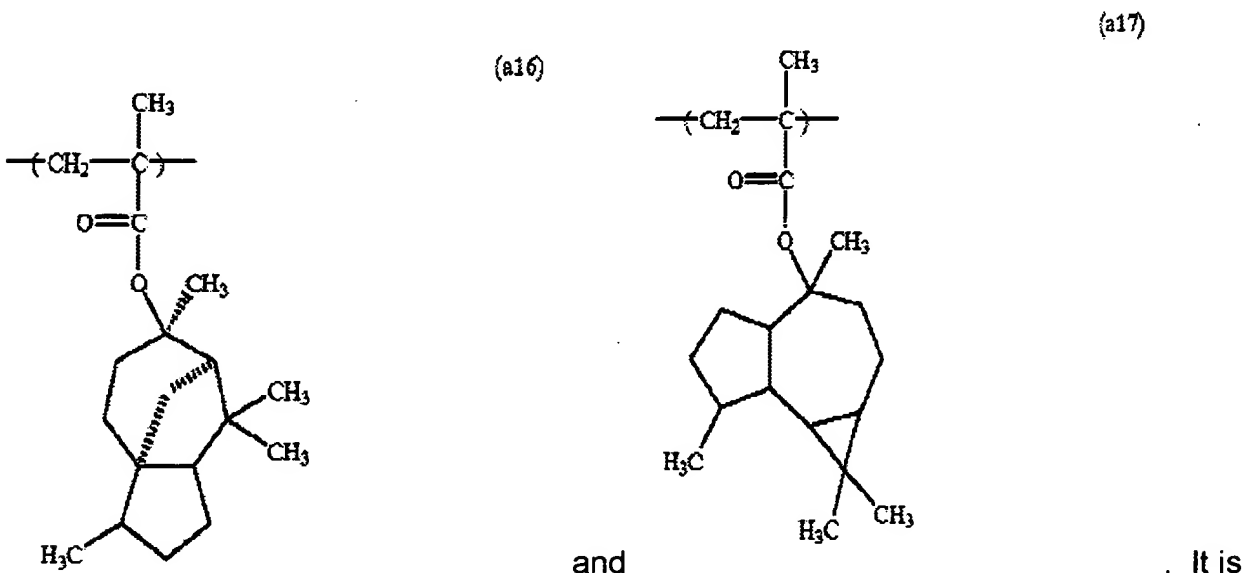
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-4, and 10 -14 are rejected under 35 U.S.C. 102(e) as being anticipated by Aoi et al. (US 6245485 B1). Aoi teaches a positive resist composition comprising (A) a compound generating an acid upon irradiation of an active light ray or radiation, (B) a resin having a polycyclic type alicyclic group and a carboxyl group and (C) a compound having at least two groups having a specific structure (see abstract). The resin component (B) preferably has a repeating structural unit having a polycyclic type alicyclic group on the side chain thereof, represented by formula (XXII), (XXIII) or

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(XXIV). The carboxyl group maybe contained in the said polycyclic unit or in a repeating unit different therefrom (c. 9, l. 20-30). Structures representative of the polycyclic type alicyclic moiety are shown as structures (1) – (46) (c. 10, l. 60-c.15, l. 29). Specific examples of repeating units represented by formula (XXII)-(XIV) include:



the examiner's position that the given formula (a16) and (a17) meet the limitations of claimed formula (2) wherein Z is a tricyclic hydrocarbon, R³ is a methyl group, R¹ are each an alkyl group having one carbon atom and R⁴ is a combination of H and alkyl groups having one carbon atom wherein n is greater than one. Component A is a photoacid generator capable of generating an acid upon irradiation with light such as UV, far-UV, g-line, i-line, h-line, KrF excimer, ArF excimer, e-beam or x-ray. Suitable examples include oxazole derivatives (PAG1), s-triazine derivatives (PAG2), iodonium salts (PAG3), sulfonium salts (PAG4), disulfone derivatives (PAG5) and iminosulfonate derivatives (PAG6) (c.65, l. 21-c. 81, l. 10). The photoacid generator is added in the amount of 0.001-40 weight %, preferably 0.01-20 weight % (c. 81, l. 11-16). The taught

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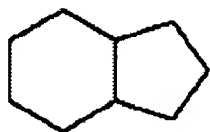
composition is coated on a substrate for use in the production of an integrated circuit, exposed through a predetermined mask, baked and developed to obtain a good resist pattern (c. 84, l. 53-58).

Claim Rejections - 35 USC § 103

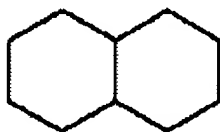
4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoai (US 6245485 B1) as applied to claims 1-4, 10 and 12-14 above. The polycyclic type alicyclic group contained in the resin (B) is preferably an alicyclic group having 5 or more carbon atoms, which may have a substituent. Aoai teaches that preferred substituents of the polycyclic type alicyclic group include a hydroxyl group, a halogen atom, a nitro group, a cyano group, an amido group, and a sulfonamido group, alkoxy groups having 1-8 carbon atoms and alkyl groups having 1-8 carbon atoms (c. 10, l. 47-59). Structures representative of the said polycyclic type alicyclic moiety



(6),



(7) and



(40) (c. 10, l.

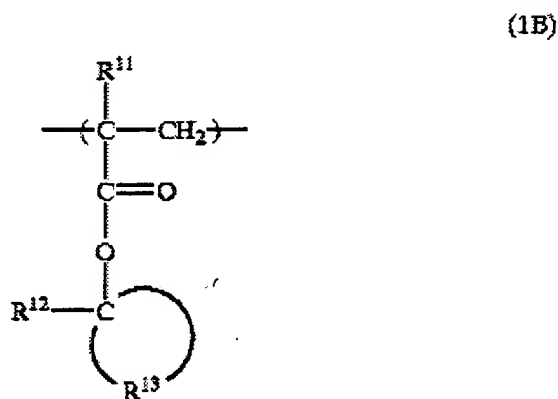
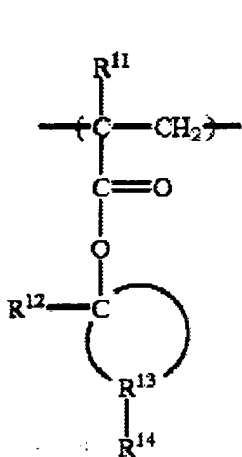
60-c. 15, l. 29). It is the examiner's position that one of ordinary skill in the art would have been motivated by the teaching of Aoai to make the taught polycyclic type resin

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(B) any of the disclosed structures such as (6), (7) or (40) which are substituted with a hydroxyl group, a halogen atom, an alkyl group, or an amino group in order to form a composition suitable for exposure using a light source of 220 nm or less and has a high sensitivity, good resolution and a high resistance against dry etching (c. 3, l. 40-51).

Thereby meeting the limitations of instant claims 5-9 and 11.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakawa et al. (US 6280897 B1). Asakawa teaches a photosensitive composition comprising a polymer having a repeating segment represented by the general formula (IA), or (IB) and a compound capable of generating an acid by irradiation with actinic radiation. :



wherein R^{11} is a hydrogen, an aliphatic hydrocarbon group, an alkoxy group, a halogen or a cyano group; R^{12} is an aliphatic hydrocarbon group or a cyclic olefin; R^{13} is either (a) a straight chain olefin having 2-12 carbons, a cyclic olefin or a heterocyclic group and (b) a hydrocarbon group represented by $(CH_2)_m$ ($m=3-9$); and R^{14} is a hydrophilic group such as OH or carboxyl (see cl. 1, 5 and 12; abstract; c. 3, l. 40-c. 6, l. 4; and c.

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8, l. 21-c. 9, l. 55) Claim 1 of the prior art meets the limitations of claimed formula (2) of instant claim 1 wherein R^{13} can be a spiro ring, a terpene ring (i.e., norbornyl, adamantyl, bornene), a steroid bile acid (tetracyclic compound), a camphor ring and a triterpene ring. Furthermore, claim 5 of the prior art meets the limitations of claimed formula (1) of instant claim 1 when R^{44} is a spiro ring, a terpene ring such as adamantyl, a steroid bile acid or a triterpene ring; R^{42-43} are a hydrocarbon or a cyclic olefin; and R^{45} is a hydrophilic group such as OH or carboxyl group. The examples teach adding a photogenerator to the formed polymers and spin-coating them onto a silicon wafer. The wafer is pre-baked and then irradiated with ArF excimer laser; post exposure baked and developed to form a positive pattern (see example I-1; c. 66, l. 14-29). It is the examiner's position that one of ordinary skill in the art would have been motivated by the teaching of Asakawa to make a photosensitive composition comprising (1) a polymer having a polymer represented by formula (1a) wherein R^{13} is a spiro ring, a terpene ring such as adamantyl, a steroid bile acid or a triterpene ring; R^{12} is an aliphatic hydrocarbon group (i.e., methyl, ethyl, butyl) and R^{14} is a hydrophilic group such as OH or carboxyl of formula (4) wherein when R^{44} is a spiro ring, a terpene ring such as adamantyl, a steroid bile acid or a triterpene ring; R^{42-43} are a hydrocarbon or a cyclic olefin; and R^{45} is a hydrophilic group such as OH or carboxyl group; and (2) a photoacid generator in order to form a resist composition which exhibits high light transmission, excellent alkali-solubility, good adhesion and good dry etch resistance (c. 3, l. 40-44).


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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M Clarke whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 7-5:30.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

9. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

ymc
April 16, 2002


JANET BAXTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700